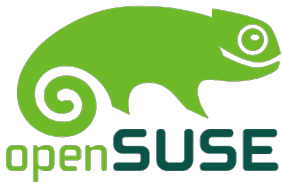


Packaging for major Linux distributions

rpm in a nutshell



Sebastian Hollizeck

July 9th, 2013

Requirements

What you should have!

SOURCE tar-ball

BUILD instructions to build the package

Source archive

A simple one

```
/
├── src
│   ├── bioexsploder ..... “REAL” PROGRAMM
│   ├── bioxsd ..... AUTO GENERATED SOURCES
│   ├── javax ..... JAVA XML LIB
│   └── org ..... APACHE CL PARSER
├── build.xml ..... ANT SCRIPT
└── norsp2xml.1 ..... MAN PAGE
```

Setting up the software

Before you begin

```
|| zypper in rpm-build
```

```
#!/bin/sh
```

```
# set your home as working dir
```

```
echo "%_topdir ${HOME}/rpm" > ${HOME}/.rpmmacros
```

```
echo "%_tmpdir ${HOME}/rpm/tmp" >> ${HOME}/.rpmmacros
```

```
# create needed structure
```

```
mkdir ${HOME}/rpm || exit 1
```

```
cd ${HOME}/rpm || exit 1
```

```
mkdir BUILD RPMS SOURCES SPECS SRPMS tmp || exit 1
```

```
# create folders depending on architecture
```

```
cd ${HOME}/rpm/RPMS || exit 1
```

```
if [ 'arch' == 'x86_64' ]; then
```

```
    mkdir ia32e noarch x86_64 || exit 1
```

```
else
```

```
    mkdir athlon i386 i486 i586 i686 noarch || exit 1
```

```
fi
```

*.spec

what to put where

```
%define name norsp2xml
%define version 0.1
%define release 0
%define section free
```

```
Summary: »      NORSp output converter to XML with BioXSD
```

```
License: »      Apache-2.0
```

```
Group: » »      Productivity/Text/Convertors
```

```
URL: » »        http://il2r-tbl.informatik.tu-muenchen.de/~seba/norsp/api/
```

```
Source0: »      http://il2r-tbl.informatik.tu-muenchen.de/~seba/norsp/norsp2xml-src-0.1\_0-dev.tar.gz
```

```
Name: » »       %{name}
```

```
Version: » »    %{version}
```

```
Release: » »    %{release}
```

```
BuildArchitectures: » noarch
```

```
BuildRequires: » » ant
```

```
BuildRequires: » » gzip
```

```
BuildRequires: » » tar
```

```
BuildRequires: » » java >= 1.7
```

```
Requires: » »    jre >= 1.7
```

```
BuildRoot: » »   %{_tmppath}/%{name}-%{version}-build
```

%description

This is a converter from the norsp standard output (<http://www.ncbi.nlm.nih.gov/pubmed/12824431>) to an xml format proposed for a common data exchange among bioinformatics (<http://www.ncbi.nlm.nih.gov/pubmed/20823319>)

*.spec

what to put where (again)

```
%prep
```

```
%setup -q -c -n %{name}-%{version}
```

```
%build
```

```
ant all
```

```
%install
```

```
#install jar
```

```
install -d -m 0755 $RPM_BUILD_ROOT%{_datarootdir}/%{name}/
```

```
install -p -m 0644 build/norsp2xml-0.1_0-dev.jar $RPM_BUILD_ROOT%{_datarootdir}/%{name}/%{name}-ri-%{version}.jar
```

```
#install man
```

```
install -d -m 0755 $RPM_BUILD_ROOT%{_mandir}/man1/
```

```
install -p -m 0644 norsp2xml.1 $RPM_BUILD_ROOT%{_mandir}/man1/norsp2xml.1
```

```
# create runnable script
```

```
mkdir $RPM_BUILD_ROOT%{_bindir}/
```

```
echo '#!/bin/sh' > $RPM_BUILD_ROOT%{_datarootdir}/%{name}/run.sh
```

```
echo "java -jar %{_datarootdir}/%{name}/norsp2xml-ri-0.1.jar" >> $RPM_BUILD_ROOT%{_datarootdir}/%{name}/run.sh
```

```
#link to bin
```

```
ln -s %{_datarootdir}/%{name}/run.sh $RPM_BUILD_ROOT%{_bindir}/norsp2xml
```

*.spec

what to put where (last)

%clean

```
rm -rf $RPM_BUILD_ROOT
```

%files

```
%defattr(-,root,root)
%{_datarootdir}/%{name}
%attr(755,root,root) %{_datarootdir}/%{name}/run.sh
%{_bindir}/norsp2xml
%{_mandir}/man1/norsp2xml*
```

%changelog

```
* Wed Jul 3 2013 Sebastian
- Changed to more generic directories
* Fri Jun 21 2013 Sebastian
- Created initial spec file
```

ant

Why does an insect need an xml?

```
<project name="norsp2xml" default="all">

  <property name="version" value="0.1.0" />
  <property name="build_dir" value="build" />
  <property name="class_dir" value="${build_dir}/classes" />
  <property name="jar_dir" value="${build_dir}/norsp2xml-${version}-dev.jar" />
  <property name="jar_src" value="${build_dir}/norsp2xml-src-${version}-dev.tar.gz" />
  <property name="src" value="src" />
  <property name="topdirs" value="bioexploder/norsp/*.java , bioxsd/norsp/*.java ,
    org/apache/commons/cli/*.java" />
  <property name="lib" value="lib" />

  <!-- Common initializations -->
  <target name="init">
    <mkdir dir="${build_dir}" />
    <mkdir dir="${class_dir}" />
  </target>
```

ant

Why does an insect need an xml? (second)

```
<!-- target definition -->
<target name="all" depends="clean, ri-jar" />

<target name="clean">
  <delete dir="${build_dir}" />
</target>

<target name="compile" depends="init">
  <javac srcdir="${src}"
    source="1.7" target="1.7"
    includes="${topdirs}"
    destdir="${class_dir}"
    debug="true">
    <classpath>
      <pathelement path="${java.class.path}" />
      <pathelement path="${class_dir}" />
    </classpath>
  </javac>
</target>
```

ant

Why does an insect need an xml? (third)

```
<target name="dist" depends="ri_src_dist,ri_bin_dist" />

<!-- binary packaging -->
<target name="ri_jar" depends="ri_bin_dist" />

<target name="ri_bin_dist" depends="compile">
  <jar jarfile="${jar-ri}">
    <!-- Let us add bit more information into jar... like version -->
    <manifest>
      <attribute name="Built-By" value="${user.name}" />
      <attribute name="Specification-Title" value="norsp2xml" />
      <attribute name="Specification-Version" value="0.1" />
      <attribute name="Specification-Vendor" value="ROSTlab" />
      <attribute name="Implementation-Title" value="BioXSD converter" />
      <attribute name="Implementation-Version" value="${version}" />
      <attribute name="Implementation-Vendor" value="Rackizeck Corp." />
    </manifest>
    <attribute name="Main-Class" value="bioexsploder.norsp.NORSpeXSploder" />
    </manifest>
    <fileset dir="${class_dir}"
      includes="bioexsploder/norsp/, bioxsd/norsp/, org/apache/commons/cli/" />
  </jar>
</target>
```

ant

Why does an insect need an xml? (fourth)

```
<!-- source packaging -->
<target name="ri_src_jar" depends="dist" />
<target name="src_dist" depends="dist" />

<target name="ri_src_dist">
  <jar jarfile="${jar_src}">
    <fileset dir="."
      includes=
" ${src}/bioexploder/norsp/,
 ${src}/bioxsd/norsp/,
 ${src}org/apache/common/cli/" />
    <fileset dir="."
      includes=
" build.xml" />
  </jar>
</target>

</project>
```



rpmlint

not as colorful

```
rpmlint ~/rpm/SPECS/norsp2xml.spec
```

- 0 packages and 1 specfiles checked; 0 errors, 0 warnings.

```
rpmbuild -ba ~/rpm/SPECS/norsp2xml.spec
```

rpm

What is in there?

```
rpm -qlp norasp2xml-0.1-0.noarch.rpm
```

- /usr/bin/norasp2xml
- /usr/share/man/man1/norasp2xml.1.gz
- /usr/share/norasp2xml
- /usr/share/norasp2xml/norasp2xml-ri-0.1.jar
- /usr/share/norasp2xml/run.sh

rpm

What does it need?

```
rpm -qRp norasp2xml-0.1-0.noarch.rpm
```

- jre >= 1.7
- rpmlib(CompressedFileNames) <= 3.0.4-1
- rpmlib(PayloadFilesHavePrefix) <= 4.0-1
- rpmlib(PayloadIsLzma) <= 4.4.6-1

rpmlint

Again?

```
rpmlint -v -i -o "NetworkEnabled True" norasp2xml  
-0.1-0.noarch.rpm ../SRPMS/norasp2xml-0.1-0.src.  
rpm ../SPECS/norasp2xml.spec
```

- 2 packages and 1 specfiles checked; 0 errors, 0 warnings.

rpm install

Let's use it

```
rpm -ivh norsp2xml-0.1-0.noarch.rpm  
Preparing ... [100%]  
Updating / installing ...  
1:norsp2xml-0.1-0 [100%]
```

rpm-install


Updates? - NO!

```
rpm -qi norasp2xml
```

```
    Name: norasp2xml
    Version: 0.1
    Release: 0
    Signature: (none)
Source RPM: norasp2xml-0.1-0.src.rpm
Build Date: Wed 03 Jul 2013 05:28:08 PM CEST
Build Host: openAcer
    URL: http://i12r-tbl.informatik.tu-
        muenchen.de/~seba/norasp/api/
Summary: NORSp output converter to XML with BioXSD
Distribution: (none)
```

OBS

Opensuse again!



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NORSp-eXSploDer

creates an xml based on the bioXSD from the standard output of norsp

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4 errors

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Source Files

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Search:


Filename	Size	Changed	
norsp2xml.spec	1.8 KB	2 days ago	
norsp2xml-src-0.1_0-dev.tar.gz	96.9 KB	2 days ago	

Showing 1 to 2 of 2 entries















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Revision 12 (latest revision is 12)

 Sebastian Hollizeck (SebastianHollizeck) committed 2 days ago (revision 12)

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Build ResultsRpmlint Results







CentOS_CentOS-6	 i586	disabled
	 x86_64	disabled
Debian_7.0	 i586	disabled
	 x86_64	disabled
Fedora_19	 i586	succeeded
	 x86_64	succeeded
Mandriva_2011	 i586	unresolvable
	 x86_64	unresolvable
RedHat_RHEL-6	 i586	unresolvable
	 x86_64	unresolvable
openSUSE_12.2	 i586	succeeded
	 x86_64	succeeded
openSUSE_12.3	 i586	succeeded
	 x86_64	succeeded

Repositories

They are everywhere!



Index of /repositories/home:/SebastianHollizeck/openSUSE_12.3

Name	Last modified	Size	
 Parent Directory		-	
 home:SebastianHollizeck.repo	03-Jul-2013 17:44	295	Details
 noarch/	03-Jul-2013 17:44	-	
 repocache/	03-Jul-2013 17:44	-	
 repodata/	03-Jul-2013 17:44	-	
 src/	03-Jul-2013 17:44	-	

Apache/2.2.12 (Linux/SUSE) Server at download.opensuse.org Port 80

MirrorBrain powered by Apache

repos-install

Updates? - YES!

```
rpm -Uhv http://download.opensuse.org/repositories/  
home:/SebastianHollizeck/openSUSE_12.3/noarch/  
norsp2xml-0.1-12.1.noarch.rpm
```


Signature RSA/SHA1, Wed 03 Jul 2013 05:35:25 PM CEST, Key
ID 51831acda1d75cd2

Vendor obs://build.opensuse.org/home:SebastianHollizeck

Distribution home:SebastianHollizeck / openSUSE_12.3

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NORSp-eXSploDer
creates an xml based on the bioXSD from the standard output of norsp
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Source Files
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norsp2xml-src-0.1_0-dev.tar.gz	96.9 KB	2 days ago	

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Revision 12 (latest revision is 12)
 Sebastian Hollizeck (SebastianHollizeck) committed 2 days ago (revision 12)
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Build Results **Rpmlint Results**

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	x86_64	unresolvable
RedHat_RHEL-6	i586	unresolvable
	x86_64	unresolvable
openSUSE_12.2	i586	succeeded
	x86_64	succeeded
openSUSE_12.3	i586	succeeded
	x86_64	succeeded

*.spec

Hit me baby one more time!

```
%define name norsp2xml
%define version 0.1
%define release 0
%define section free

Summary: >      NORSp output converter to XML with BioXSD

License: >      Apache-2.0
Group: >>      Productivity/Text/Convertors
URL: > >      http://il2r-tbl.informatik.tu-muenchen.de/~seba/norsp/api/
Source0:>      http://il2r-tbl.informatik.tu-muenchen.de/~seba/norsp/norsp2xml-src-0.1_0-dev.tar.gz
Patch0:>>      norsp2xml-build.patch
Patch1:>>      norsp2xml-java6.patch

Name:> >      %{name}
Version:>      %{version}
Release:>      %{release}

BuildArchitectures:>    noarch

%if %{defined rhel_version} || %{defined centos_version} || %{defined mdkversion}
BuildRequires:> >      java-devel >= 1.6
%else
BuildRequires:> >      java-devel >= 1.7
%endif

BuildRequires:> >      ant
BuildRequires:> >      gzip
BuildRequires:> >      tar

%if %{defined rhel_version} || %{defined centos_version} || %{defined mdkversion}
Requires:> >      jre >= 1.6
%else
Requires:> >      jre >= 1.7
```

Patches

Not the ones for skin!

`diff -Natur old new > file.patch`

The screenshot shows a diff tool interface with the following components:

- Source Folder:** /home/sebastian/rpm/BUILD/norsp2xml-0.1...
- Destination Folder:** /home/sebastian/NetBeansProjects/BIOEXS...
- Source File:** NORSpEXploDER.java
- Destination File:** NORSpEXploDER.java
- Source Line / Destination Line / Difference:** A table showing line numbers and changes. For example, line 322 is 'Changed 1 line', line 332 is 'Changed 1 line', line 342 is 'Changed 1 line', line 387 is 'Changed 1 line', line 428 is 'Inserted 1 line', line 577 is 'Changed 1 line', line 601 is 'Changed 13 lines', line 615 is 'Inserted 1 line', line 657 is 'Changed 1 line', line 723 is 'Changed 1 line', and line 786 is 'Changed 1 line'.
- Source Code (Left):** NORSpEXploDER.java. The code shows a `parse` method that takes an `InputStream` and returns a `HashMap<NorspData, Object>`. The patch highlights changes in the `HashMap` initialization and the `linesplit` logic.
- Source Code (Right):** NORSpEXploDER.java. The code shows the same `parse` method, but with the patch applied. The patch highlights changes in the `HashMap` initialization and the `linesplit` logic.

The patch highlights the following changes in the `parse` method:

- Line 322: `HashMap<NorspData, Object> result = new HashMap<>();` is changed to `HashMap<NorspData, Object> result = new HashMap<NorspData, Object>();`
- Line 332: `String currentLine;` is changed to `String currentLine;`
- Line 342: `String[] linesplit;` is changed to `String[] linesplit;`
- Line 387: `int currentpos = 0;` is changed to `int currentpos = 0;`
- Line 428: `StringBuilder tmhseq = new StringBuilder();` is changed to `StringBuilder tmhseq = new StringBuilder();`
- Line 577: `StringBuilder norseq = new StringBuilder();` is changed to `StringBuilder norseq = new StringBuilder();`
- Line 601: `StringBuilder accesseq = new StringBuilder();` is changed to `StringBuilder accesseq = new StringBuilder();`
- Line 615: `try (BufferedReader inReader = new BufferedReader(new InputSt` is changed to `try (BufferedReader inReader = new BufferedReader(new InputSt`
- Line 657: `while ((currentLine = inReader.readLine()) != null) {` is changed to `while ((currentLine = inReader.readLine()) != null) {`
- Line 723: `linesplit = currentLine.split("\\s*(\\s*)");` is changed to `linesplit = currentLine.split("\\s*(\\s*)");`
- Line 786: `String values = linesplit[1];` is changed to `String values = linesplit[1];`
- Line 815: `String[] valuesplit = values.split(" ", 2);` is changed to `String[] valuesplit = values.split(" ", 2);`
- Line 844: `HashMap<Character, String> structureAlphabet = new` is changed to `HashMap<Character, String> structureAlphabet = new`
- Line 873: `for (String s : valuesplit) {` is changed to `for (String s : valuesplit) {`

Patches

Apply them to clean skin









```
%prep
%setup -q -c -n %{name}-%{version}
#patch javasource for 1.6 and alter build.xml
%if 0%{defined rhel_version} || 0%{defined centos_version} || 0%{defined mdkversion}
%patch0 -b .buildb
%patch1 -b .javab
%endif
```

The End


Finally!

Source Files


Show **25** entries Search:


Filename	Size	Changed	
norsp2xml-build.patch	384 Bytes	1 hour ago	 
norsp2xml-java6.patch	7.73 KB	1 day ago	 
norsp2xml-src-0.1_0-dev.tar.gz	236 KB	1 day ago	 
norsp2xml.spec	2.48 KB	35 min ago	 





















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Revision 22 (latest revision is 22)

 [Sebastian Hollizeck \(SebastianHollizeck\)](#) committed 35 min ago (revision 22)

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Build Results	Rpmlint Results
CentOS_CentOS-6	 i586 succeeded
	 x86_64 succeeded
Debian_7.0	 i586 excluded
	 x86_64 excluded
Fedora_19	 i586 succeeded
	 x86_64 succeeded
Mandriva_2010.1	 i586 succeeded
	 x86_64 succeeded
Mandriva_2011	 i586 failed
	 x86_64 failed
RedHat_RHEL-6	 i586 succeeded
	 x86_64 succeeded
SLE_11_SP2	 i586 succeeded
	 x86_64 succeeded
openSUSE_12.2	 i586 succeeded
	 x86_64 succeeded
openSUSE_12.3	 i586 succeeded
	 x86_64 succeeded
openSUSE_Factory	 i586 succeeded
	 x86_64 succeeded

Build service

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package search